

KELSO LAKE RESORT (PWSNO 1090067) SOURCE WATER ASSESSMENT REPORT

June 26, 2001



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR KELSO LAKE RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your well, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Kelso Lake Resort* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Potential Contaminant Inventory. The Kelso Lake Resort public water system, located on the northern side of Kelso Lake in Bonner County Idaho, serves three cabins, a residence and 13 RV hookups. Drinking water for the resort is supplied by a 33-foot deep well. The water is not treated before entering the distribution system. Potential contaminant sources documented inside the 1000-foot boundary around the well include surface water, roads, and septic system components. A borrow pit north of the well is not considered hazardous to the ground water.

The map on page 5 of this report shows the well location, the 1000-foot boundary and approximate locations of roads, buildings, the septic system and the borrow pit relative to the well. The well, about 20 feet from a small stream and 210 feet from the lake, needs to be tested to determine whether it is directly influenced by surface water. Table 1 summarizes information about the sites inventoried and contaminants that may be associated with them.

Table 1. Kelso Lake Resort Potential Contaminant Inventory

Map ID	Source Description	Potential Contaminants	Source of Information
1	Borrow Pit	None	Mines Database
2	Surface Water	Microbial	USGS Map, PWS File
3	Roads	IOC, SOC, VOC, Microbial	USGS MAP
4-6	Septic System Components	IOC, Microbial	PWS File

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

USGS= United States Geological Survey, PWS = Public Water System

Water Quality History. Kelso Lake Resort is required to monitor quarterly for bacterial contamination. Total coliform bacteria were present in samples drawn at the pumphouse and at points in the distribution system in May 1999. Positive samples from sites in the distribution system are on record for April, May and July 1997. Results of annual nitrate tests range from 0.418 to 1.02 mg/l. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l.

Well Construction. The Kelso Lake Resort well was drilled in September 1977 to a depth of 33 feet, and has a 6-inch steel casing. There is no well driller's report in the public water system file. The 1996 Sanitary Survey of the resort water system indicates that submersible wires entering the wellhead need to be sealed, the pump house floor needs to be repaired and the well needs to be vented.

Table 2. Selected Characteristics of Kelso Lake Resort Wells

Well	Total Depth (ft.)	Depth to Ground Water (ft)	Static Water Level (ft)	Depth of Surface Seal (ft)	Depth of Casing (ft)
Well #1	33	unknown	27	unknown	unknown

Well Site Characteristics. Soils in the 1000-foot zone around the wells are generally poorly drained to moderately well drained in the area south of Kelso Lake Road, providing some protection against migration of contaminants toward the well. Soils north of the road are classified as well drained. The soil structure above the water table in the well is unknown because no well log is on file.

Susceptibility to Contamination. A susceptibility analysis DEQ conducted on the Kelso Lake Resort well, incorporating information from the public water system file, ranked the well highly susceptible to all classes of regulated contaminants. While there are few potential contaminant sites documented within 1000 feet of the well, the well is vulnerable because it is shallow and located about 20 feet from a small stream. The susceptibility analysis worksheet for your well on pages 6 this report shows how your well was scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Kelso Lake Resort source water protection activities should focus first on bringing the well into full compliance with Idaho rules for Public Drinking Water Systems as outlined in the 1996 Sanitary Survey. Improvements to the well house floor, sealing submersible wire at the wellhead and venting the well properly are the first defense against surface contaminants entering the ground water or distribution system through the well.

Because the well is shallow and near a stream, the well may be recharged directly by the stream. The resort needs to complete testing to determine whether the well is directly influenced by surface water, and in the meantime should monitor activities in the stream watershed that could affect water quality. The resort should review its maintenance practices to be sure that no solvents, herbicides, road oil, dust abatement compounds etc. are used or stored within 50 feet of the well or near the stream. It is also important to keep pets and wildlife away from the well.

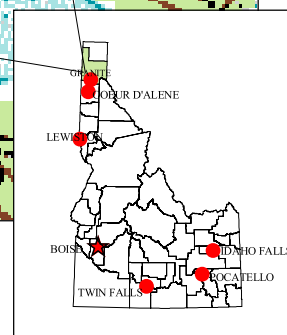
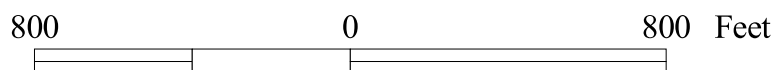
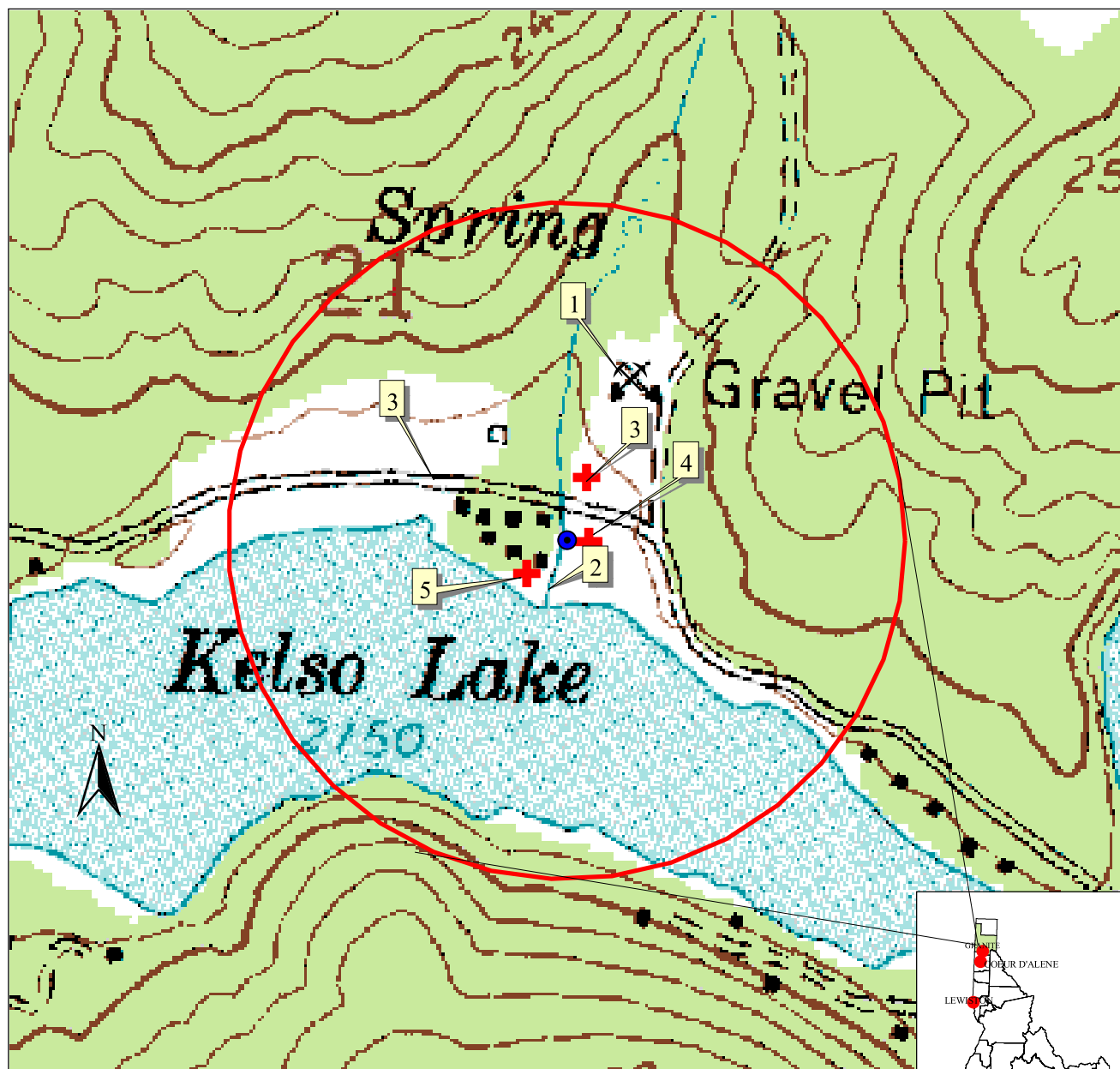
Because the Resort doesn't have direct jurisdiction over the entire 1000-foot protection zones around its well, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ website:

<http://www.deq.state.id.us>

Figure 1. Kelso Lake Resort Delineation and Potential Contaminant Inventory.



Legend			
	Wellhead		RICRIS Site
	Buildings		Business Mailing List
	Roads		Dairy
	1000 Foot Buffer Zone		LUST Site
	Mine		UST Site
	Enhanced Inventory		Closed
	Toxic Release Inventory		Open
	CERCLIS Site		NPDES Site
	AST		Recharge Point
	SARA Title III Site (EPCRA)		Injection Well
	Group I Site		Cyanide Site
	Landfill		Wastewater Land App.Site



PWS # 1090067
Well #1

Ground Water Susceptibility Analysis

Public Water System Name :

KELSO LAKE RESORT

Well# :

WELL #1

Public Water System Number :

1090067

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1. System Construction		SCORE			
Drill Date	9/1/77				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES	1996			
Well meets IDWR construction standards	UNKNOWN	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	UNKNOWN	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain and protected from surface runoff	YES	0			
Total System Construction Score		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO --WELL IS 33 FEET DEEP	1			
Aquitard present with > 50 feet cumulative thickness	UNKNOWN	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - SANITARY SETBACK		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use SANITARY SETBACK	RANGELAND, WOODLAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in SANITARY SETBACK	YES STREAM ABOUT 20' FROM WELL	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - SANITARY SETBACK		0	0	0	0
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	YES	2	1	1	2
(Score = # Sources X 2) 8 Points Maximum		4	2	2	4
Sources of Class II or III leacheable contaminants or Microbials	YES	2	1	1	
4 Points Maximum		2	1	1	
1000-FOOT RADIUS contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-FOOT RADIUS	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-FOOT RADIUS		6	3	3	4
Cumulative Potential Contaminant / Land Use Score		6	3	3	4
4. Final Susceptibility Source Score		13	12	12	13
5. Final Well Ranking		High	High	High	High

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.